

Rec  
10/6/17



### MTSU Clean Energy Initiative Project Funding Request

There are five (5) sections of the request to complete before submitting. See <http://www.mtsu.edu/~sga/cleanenergy.shtml> for funding guidelines. Save completed form and email to [cee@mtsu.edu](mailto:cee@mtsu.edu) or mail to MTSU Box 57.

<b>1. General Information</b>	
Name of Person Submitting Request Mark Abolins	
Department/Office Geosciences	Phone # (Office) 615-594-4210
MTSU Box # 9	Phone # (Cell) 615-594-4210
E-mail Mark.Abolins@mtsu.edu	Submittal Date 10/6/17

<b>2. Project Categories (Select One)</b>	
Select the category that best describes the project.	
<input type="checkbox"/> Energy Conservation/Efficiency	<input type="checkbox"/> Sustainable Design
<input type="checkbox"/> Alternative Fuels	<input checked="" type="checkbox"/> Other Sustainable instruction
<input type="checkbox"/> Renewable Energy	

<b>3. Project Information</b>
<ul style="list-style-type: none"> <li>a. Please provide a brief descriptive title for the project.</li> <li>b. The project cost estimate is the expected cost of the project to be considered by the committee for approval, which may differ from the total project cost in the case of matching funding opportunities. <b>Any funding request is a 'not-to-exceed' amount. Any proposed expenditure above the requested amount will require a resubmission.</b></li> <li>c. List the source of project cost estimates.</li> <li>d. Provide a brief explanation in response to question regarding previous funding.</li> </ul>
3a. Project Title Earth Science Course Paper Reduction Pilot Project
3b. Project Cost Estimate <b>\$3,657.34</b>
3c. Source of Estimate <b>See 4.g.</b>
3d. If previous funding from this source was awarded, explain how this request differs? <b>N/A</b>

#### 4. Project Description

(Completed in as much detail as possible.)

- a. The scope of the work to be accomplished is a detailed description of project activities.
- b. The benefit statement describes the advantages of the project as relates to the selected project category.
- c. The location of the project includes the name of the building, department, and/or specific location of where the project will be conducted on campus.
- d. List any departments you anticipate to be involved. Were any departments consulted in preparation of this request? Who? A listing may be attached to this form when submitted.
- e. Provide specific information on anticipated student involvement or benefit.
- f. Provide information for anticipated future operating and/or maintenance requirements occurring as a result of the proposed project.
- g. Provide any additional comments or information that may be pertinent to approval of the project funding request.

#### 4a. Scope: Work to be accomplished

The overall goal of this project is to reduce paper consumption within 1-2 sections of Geol 1030 Introduction to Earth Science. Paper consumption will be reduced by (A) converting hard copy course materials into digital materials and (B) providing each pair of students in the class with a low-cost 7" tablet to view the materials during class. Implementation will be paired with a recycling drive (among students enrolled in the class) targeting unwanted electronics, metals, and plastics. The intent of the drive is to offset materials used in the manufacture of the tablets. (C) The faculty mentor and student participants will share project successes at on-campus forums in an effort to encourage similar efforts in other classrooms.

A. Converting hard copy course materials into digital materials.

Each student enrolled in the class of 49-125 (100 is typical) currently prints 112 pages of illustrations and worksheets for in-class use. (Most of the materials can be viewed at [http://capone.mtsu.edu/mabolins/Doc1\\_p11to71.pdf](http://capone.mtsu.edu/mabolins/Doc1_p11to71.pdf) and <http://capone.mtsu.edu/mabolins/Doc2Fall2016.pdf>.) With help from the faculty mentor, student participants will redesign course materials, so that most materials are easily viewed on a tablet.

B. Providing each pair of students with a low-cost tablet to view materials during class.

So that each pair of students in a class of up to 125 can view and work with the materials in class, 63 tablets will be purchased. These will be distributed at the beginning of class, collected at the end of class, and charged by the faculty mentor between classes. To offset materials used in the manufacture of the tablets, the faculty mentor will collect electronics, metals, and plastics from the students and recycle them.

#### 4b. Scope: Benefit Statement

The principal benefits are (A) reduced deforestation, (B) reduced energy use, and (C) improved student experience.

(A) The project will save up to approx. 1.68 trees per 125-student class according to figures in a news story describing an interview with Susan Kinsella

([https://www.bizjournals.com/buffalo/blog/morning\\_roundup/2014/05/pulp-fiction-how-many-trees-does-it-take-to-make.html](https://www.bizjournals.com/buffalo/blog/morning_roundup/2014/05/pulp-fiction-how-many-trees-does-it-take-to-make.html)), a leader behind the Environmental Paper Network (<http://c.environmentalpaper.org/home>).

(B) The energy savings associated with this paper reduction is approximately 779 kWh or about the same amount of energy used in a typical residence over the course of 3 weeks. Also, there should be a savings of approx. 1,335 gal. of waste water and 159 lbs. of solid waste.

(C) The proposed course redesign will better-align the student experience with the course theme. The course motto (in Dr. Abolins' sections) is "sustain humanity, sustain the Earth," and several in-class activities are largely or partially about sustainability. It is probably not surprising, therefore, that during recent semesters several students have commented about being required to print a pair of documents totaling 112 pages in a course that has sustainability as a primary focus. Here's an anonymous SurveyMonkey entry from early October, 2017: "This course does take up a lot of paper. I know it was mentioned in class that the department is trying to use less paper but maybe start by taking the second half of the class and turning into a technological learning style if the whole course cannot be that way right away. 10/1/2017 4:27 PM." When polled on 10/4 and 10/5/17, 55 of 79 respondents (70%) in one section and 24 of 31 respondents (77%) in another section indicated that they would prefer to view illustrations on a tablet.

<p><b>4. Project Description (continued)</b></p>
<p>4c. Location of Project (Building, etc.) Davis Science Building (DSB 217)</p>
<p>4d. Participants and Roles Dr. Mark Abolins (Geosciences) will supervise the project.</p> <p>Most course redesign work will be performed by students recruited from the Department of Geosciences. Some members of the department's Sigma Gamma Epsilon (SGE) and American Institute of Professional Geologists (AIPG) Student Chapters will likely want to participate. In addition, some of the students in Dr. Pat Boda's PGEO4020 Environmental Issues, Impacts, and Sustainability course will likely want to participate.</p>
<p>4e. Student participation and/or student benefit</p> <p>An underlying goal is to stimulate interest in sustainability projects among Geosciences students, a population which has generally not initiated sustainability projects in the past. Student participants will gain experience in course redesign. This would be especially valuable to students in the "Earth Science Education" career path within the Geosciences major. Ideally, three students will be recruited, and they will work as a team with a total effort of 75 hrs for the entire team.</p> <p>Students enrolled in Geol 1030 will explore the benefits of the project for the environment. The course includes a writing assignment, and students will be encouraged to research the environmental impacts of reduced paper use and the benefits of recycling electronics, metals, and plastics. The faculty mentor will also encourage them to develop their own ideas for sustainability projects.</p>
<p>4f. Future Operating and/or Maintenance Requirements</p> <p>The cost of charging the tablets is negligible.</p> <p>If all of the tablets were replaced every 5 years, the annualized cost would be \$569.27. However, it is anticipated that all of the tablets will not be replaced because students will increasingly bring their own tablets and laptops to class. Perhaps in the future a few tablets will be purchased for students who cannot afford them or who forget to bring their own on specific days.</p>
<p>4g. Additional Comments or Information Pertinent to the Proposed Project</p> <p>Budget detail. Cost of tablets is based on the cost of RCA Voyager (7" 16GB Tablet Android 6.0) which is \$45.18 after tax, and purchase of 63 tablets: <math>45.18 \times 63 = \\$2,846.34</math>. Cost of charging strips is based on cost of 12-outlet Holsem strips which is \$30.50 after tax, and purchase of 2 strips: <math>30.50 \times 2 = \\$61.00</math>. Cost of student labor is based on \$10/hr and a total of 75 hours: <math>10/\text{hr} \times 75 \text{ hrs} = \\$750</math>.</p> <p>Total: \$3,657.34</p>

### 5. Project Performance Information

Provide information if applicable.

- a. Provide information on estimated annual energy savings stated in units such as kW, kWh, Btu, gallons, etc.
- b. Provide information on estimated annual energy cost savings in monetary terms.
- c. Provide information on any annual operating or other cost savings in monetary terms. Be specific.
- d. Provide information about any matching or supplementary funding opportunities that are available. Identify all sources and explain.

#### 5a. Estimated Annual Energy Savings (Estimated in kW, kWh, Btu, etc.)

Energy saved (by humanity) is 779 kWh. Note that this is not a reduction in the amount of energy consumed at MTSU.

#### 5b. Annual Energy COST Savings (\$)

The project will not result in less energy use by MTSU. There will be a small cost increase associated with charging 63 tablets.

#### 5c. Annual Operating or Other Cost Savings. Specify. (\$)

None.

#### 5d. Matching or Supplementary Funding (Identify and Explain)

No matching or supplementary funds are available for this project.